We claim:

1. A coated multilayer structure comprising:

a polymeric base layer;

an inorganic oxide gas barrier layer on a surface of the polymeric base layer; and

a top coat on the inorganic oxide gas barrier layer, the top coat comprising a soluble compound capable of reducing the permeability of the multilayer structure to gas or vapor.

2. A coated multilayer structure as in claim 1 wherein the soluble compound has a carboxyl, hydroxyl, or carboxamide functional group.

3. A coated multilayer structure as in claim 1 wherein the soluble compound is in a solid state at a temperature of 25 C and atmospheric pressure.

4. A coated multilayer structure as in claim 1 wherein the soluble compound is nonreactive with silica.

5. A coated multilayer structure as in claim 1 wherein the soluble compound is nontoxic.

6. A coated multilayer structure as in claim 1 wherein the soluble compound is polymeric.

7. A coated multilayer structure as in claim 6 wherein the polymeric soluble compound is selected from the group consisting of carboxymethyl cellulose, poly(acrylamide), polydextrose, poly(acrylic acid), and poly(vinyl alcohol).

8. A coated multilayer structure as in claim 1 wherein the soluble compound is monomeric.

9. A coated multilayer structure as in claim 8 wherein the monomeric soluble compound is selected from the group consisting of sucrose, caramel, and citric acid.

10. A coated multilayer structure as in claim 1 wherein soluble compound is water soluble and is applied to the inorganic oxide gas barrier layer in an aqueous solution.

11. A coated multilayer structure as in claim 10 wherein the soluble compound, when in the aqueous solution, is in the form of molecules having a maximum dimension less than one micron.

12. A coated multilayer structure as in claim 1 wherein the inorganic oxide gas barrier layer has pinholes and the top coat is at least partially disposed in the pinholes.

13. A coated multilayer structure as in claim 1 wherein the inorganic oxide gas barrier layer is an SiOx coating.

14. A coated multilayer structure as in claim 1 wherein the inorganic oxide gas barrier layer is applied to the base layer with vapor deposition or sputtering.

15. A coated multilayer structure as in claim 1 wherein the base layer is a thermoplastic layer.

16. A coated multilayer structure as in claim 1 wherein the base layer is polyethylene terephthalate.

17. A coated multilayer structure as in claim 1 wherein the multilayer structure is a container.

18. A coated multilayer structure as in claim 17 wherein the multilayer structure is a container, the base layer forms a container body, and the gas barrier layer is on an exterior surface of the container body.

19. A packaged beverage comprising a container as in claim 17 and a beverage disposed in the container.

20. A packaged beverage as in claim 19 wherein the beverage is a carbonated beverage.

21. A method for reducing the permeability of vapor or gas though a multilayer structure comprising a polymeric base layer and an inorganic oxide gas barrier layer on a surface of the polymeric base layer, the method comprising applying to the inorganic oxide gas barrier layer a top coat comprising a soluble compound capable of reducing the permeability of the multilayer structure to gas or vapor.

22. A method as in claim 21 wherein the soluble compound has a carboxyl, hydroxyl, or carboxamide functional group.

23. A method as in claim 21 wherein the soluble compound is in a solid state at a temperature of 25 degrees C and atmospheric pressure.

24. A method as in claim 21 wherein the soluble compound is nonreactive with SiOx.

25. A method as in claim 21 wherein the soluble compound is nontoxic.

26. A method as in claim 21 wherein the soluble compound is polymeric.

27. A method as in claim 26 wherein the polymeric soluble compound is selected from the group consisting of carboxymethyl cellulose, poly(acrylamide), polydextrose, poly(acrylic acid), and poly(vinyl alcohol).

28. A method as in claim 21 wherein the soluble compound is monomeric.

29. A method as in claim 28 wherein the monomeric soluble compound is selected from the group consisting of sucrose, caramel, and citric acid.

30. A method as in claim 21 wherein the soluble compound is water soluble and the step of applying the soluble compound comprises applying the water soluble compound to the inorganic oxide gas barrier layer in an aqueous solution.

31. A method as in claim 30 wherein the soluble compound, when in the aqueous solution, is in the form of molecules having a maximum dimension less than one micron.

32. A method as in claim 21 wherein the inorganic oxide gas barrier layer has pinholes and the top coat is at least partially disposed in the pinholes.

33. A method as in claim 21 wherein the inorganic oxide gas barrier layer is an SiOx coating.

34. A method as in claim 21 wherein the inorganic oxide gas barrier layer is applied to the base layer with vapor deposition or sputtering.

35. A method as in claim 21 wherein the base layer is a thermoplastic layer.

36. A method as in claim 21 wherein the base layer is polyethylene terephthalate.

37. A method as in claim 21 wherein the multilayer structure is a container.

38. A method as in claim 37 wherein the multilayer structure is a container, the base layer forms a container body, and the gas barrier layer is applied to an exterior surface of the container body.

39. A method of packaging a beverage comprising:

providing a container comprising a polymeric container body and an inorganic oxide gas barrier layer on an exterior surface of the container body;

applying to the inorganic oxide gas barrier layer a top coat comprising a soluble compound capable of reducing the permeability of the container to gas or vapor; and

depositing a beverage in the container.

40. A method as in claim 39 wherein the beverage is a carbonated beverage.